Responses to Ohio EPA Comments on the Second Quarterly Groundwater Level Measurements and First Semi-Annual Groundwater Sampling Event Site-Wide Groundwater Investigation Plum Brook Ordnance Works, Sandusky Ohio

Reference: *Fax from Ron Nabors, OEPA Northwest District Office, dated July 6, 1998. Comments by OEPA technical staff.*

Comment 1: **IT conducted second quarter ground water level measurement activities at site-wide NPBS shallow and bedrock monitoring wells on November 12, 1997. IT also conducted first semi-annual groundwater sampling activities at the above wells during a period of time from October-November 1997. These two activities were completed as part of the on-going site-wide ground water investigation at the facility. Currently (May 1997), there are 85 monitoring wells at NPBS; 62 wells and 2 piezometers are screened in the shallow glacial till and 21 wells are screened in competent bedrock (limestone).**

Response: *Noted. No revision is required.*

Comment 2: **Table 2-2 of the submittal notes ground water field parameters collected during development and /or redevelopment activities at the shallow/bedrock monitoring wells at the facility during the second quarter/first semi-annual event (Section 2.2). The third column of Table 2-2 lists values of specific conductivity in units of uhmos/cm. The Ohio EPA is unclear as to the low values indicated in this column for a majority of the wells. IT should confirm the units used for specific conductivity (umhos/cm or mS/cm) values in column 3 and submit a revised Table 2-2 to the Ohio EPA for incorporation into the document. Well development logs in Appendix B of the submittal note units for specific conductivity in mS/cm.**

Response: *The unit for the specific conductivity readings should be mS/cm The typographic error on Table 2-2 was corrected.*

Comment 3: **Rising head hydraulic conductivity slug tests were performed at eleven monitoring wells (3 shallow wells and 8 bedrock wells) installed during the second quarter/first semi-annual event (Section 2.3). Calculated hydraulic conductivities for the shallow saturated zone ranged from 2.61 x 10^{-4} to 7.47 x 10^{-2} cm/sec with a geometric mean of 3.08x10^{-3} cm/sec. Calculated hydraulic conductivities for the bedrock zone ranged from 1.10x 10^{-5} to 7.83x 10^{-3} cm/sec with a geometric mean of 1.2x10^{-4} cm/sec.**

Response: *Noted. No revision is required.*

Comment 4: **A total of 79 monitoring wells were measured for ground water level elevations during the second quarterly water level event; 58 shallow wells, 19 bedrock wells, and 2 piezometers were measured (Section 2.4). A total of 55 wells (44 existing and 11 new wells) were subsequently sampled during the first semi-annual event (Section 2.5). Ground water samples were analyzed for the following parameters (Table omitted).**

Response: *Noted. No revision is required.*

Comment 5: **Groundwater analytical data obtained during the first semi-annual sampling event were compared to USEPA Region 3 residential risk based concentration (RBC) values (Section 5.3). IT states that RBCs used in the site screening process are located in Section 6.9 Tables and in Appendix B of the submittal. However, these RBCs are not located in Appendix B. IT should either submit these RBC values to the Ohio EPA for incorporation into the document (Appendix B) or revise the text in Section 5.3 appropriately.**

Response: *The RBC values are included in Appendix G as screening levels.*

Comment 6: **Ground water analytical results from shallow and bedrock wells sampled during the first semi-annual event which exceeded their associated RBCs are summarized in the Table below with corresponding area of concern (Table is omitted here)**

Upon review of Table 6-2 and 6-3 of the submittal, there appears to be a discrepancy between concentrations of SVOCs and nitroaromatics for several wells sampled during the first semi-annual event. For example, Table 6-2 notes a concentration of 1800 ug/L for 2,4-dinitrotoluene in well PPB-PR-MW07. Table 6-3 notes a concentration of 1200 ug/L for 2,4-dinitrotoluene in well PB-PR-MW07. IT should review the concentrations noted on Table 6-2 and 6-3 and revise them so that indicate the correct concentration for each parameter at each corresponding well.

Response: *Both Method 8330 for nitroaromatics and Method 3520B/8270B for SVOCs can detect explosive compounds in water, such as 2,4-DNT or 2,6-DNT, but the results might be slightly different. This is why the reported concentrations for the same nitroaromatic compound (2,4-DNT) from the same sample in Table 6-2 (SVOCs) and in Table 6-3 (Nitroaromatics) are different. In such cases, the higher value was used in the data interpretation process as discussed in the report.*

Comment 7: **IT should review Section 7.1.3.1 through 7.1.3.11 of the submittal and check to see that each parameter which exceeds its associated RBC in the**

corresponding well is accurately noted. For example, Section 7.1.3.1 has failed to include benzene detected above its RBC in bedrock well PB-BED-MW14.

Response: *Section 7.1.3.1 only discussed water quality of overburden water-bearing zone in West Area Red water Ponds. The detection of benzene in PB-BED-MW14 was presented in Section 7.1.2 where analytical data in bedrock wells were discussed.*

Comment 8: **Section 7.2 of the submittal lists recommendations for further investigatory activities at the NPBS based on analytical results of the first semi-annual event. The first bullet under this section recommends that site-wide background ground water concentrations for metals should be established. The Ohio EPA recommends that IT establish these background metals concentrations in both the shallow (overburden) and deep (bedrock) saturated zones. Areas to avoid for background sampling locations include:**

(1) past waste management areas where solid and/or hazardous wastes or wastewater may have been placed on the ground, areas of concentrated air pollutant deposition (from a definable localized source), or area affected by runoff;
(2) roads, roadsides, parking lots, areas surrounding parking lots or other paved areas, railroad tracks or railway areas or other areas affected by their runoff;
(3) storm drains or ditches presently or historically receiving industrial or urban runoff;
(4) spill areas;
(5) material handling areas, such as truck or rail car loading areas or near pipelines;
(6) fill areas; and
(7) other areas as determined by the Ohio EPA (NWDO).

Data obtained from the background ground water sampling locations will allow IT to calculate an action level or upper confidence limit (UCL) for the determination of remediation standards for detected hazardous waste constituents in background samples.

Response: *The reviewer's recommendations regarding locations to be avoided when selecting background wells are noted and will be considered during the evaluation of available background data or to recommend new background wells. Also refer to response to USACE comment 28.*

Comment 9: **The Ohio EPA recommends that the NPBS continue to collect water level measurements from shallow and deep monitoring wells on a regular (quarterly) basis to determine seasonal and spatial ground water flow**

directions and variability (potentiometric maps), ground water flow velocities, and horizontal and vertical ground water gradients. This data can also be used to aid in the determination of rate of migration of contaminants at the site and for the selection of appropriate remedial techniques if they are warranted.

Response: *OEPA's recommendation is noted. The issue of whether or not to continue site-wide groundwater monitoring at PBS will be discussed in the submittal of the annual groundwater investigation report.*

Comment 10: **In future semi-annual data submittal, the Ohio EPA recommends that IT include a table of analytical method detection limits (i.e. Table 2-5 of the submittal) for the parameters sampled for in shallow and deep monitoring wells at the NPBS. IT should continue to ensure that the laboratory they have contracted to perform their analytical services can achieve method detection limits below associated maximum contaminant levels for those parameters which have them.**

Response: *Concur. A table of analytical method detection limits will be provided in the annual report. IT project chemists will communicate with the lab on a regular basis to ensure that the method detection limits are in compliance with the QAPP.*

INTERNATIONAL TECHNOLOGY CORPORATION

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